

Amendment Dated 18 April 18 2006
Supplemental to Amendment Dated 28 February 2006

Application Number 10/775,465
Art Unit 3743, Examiner Lopez

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A spacer for delivering a medication spray into the lungs of a patient, the medication spray dispensed by an inhaler into the spacer, the spacer comprising:
 - a. a first conical body having a large diameter distal end and a small diameter proximal end;
 - b. a second conical body having a large diameter distal end and a small diameter proximal end joined to the distal end of the first conical body;
 - c. a mouthpiece positioned at the proximal end of the conical first body;
 - d. a spray inlet positioned at the distal end of the second conical body to receive a medication spray dispensed by an inhaler; and
 - e. the first conical body further comprising a first internal chamber and the second conical body comprising a second internal chamber, the first and second internal chambers forming an unobstructed, linear spray conduit having a continuous spray passage from the spray inlet to the mouthpiece.
2. (Previously Presented) The spacer of claim 1 further comprising a plurality of air inlets passing through the first body to allow external air to pass into the first body, the air inlets positioned downstream from the spray inlet near the distal end of the first body.
3. (Original) The spacer of claim 2, wherein the plurality of air inlets are evenly spaced around the first body.
4. (Original) The spacer of claim 2 wherein the first body includes a large diameter distal end surface and wherein the air inlets are positioned in the large diameter distal end surface.
5. (Original) The spacer of claim 4 further comprising a one-way valve proximate the mouthpiece, the one-way valve functional to allow the patient to inhale but not exhale through the spray passage in the spacer.
6. (Cancelled)

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7. (Currently Amended) The spacer of claim 1 wherein the cross-sections of the first and second conical bodies are elliptical.

8. (Cancelled)

9. (Currently Amended) A spacer for delivering a medication spray ejected by an inhaler external to the spacer to the lungs of a patient through the patient's mouth, the spacer comprising:

- a. a conduit having a proximal end and a distal end;
- b. a spray inlet attached to the distal end of the conduit, the spray inlet adapted for receiving the medication spray from the inhaler;
- c. a mouthpiece attached to the proximal end of the conduit;
- d. the conduit including at least one interior chamber defining ~~a continuous~~ an unobstructed, linear spray passage from the spray inlet to the mouthpiece; and
- e. at least one air inlet passing through the wall of the conduit to allow external air to pass into the conduit, the air inlet positioned downstream from the spray inlet.

10. (Original) The spacer of claim 9 further comprising a unidirectional valve functionally positioned within the spray passage proximate the mouthpiece.

11. (Original) The spacer of claim 10 wherein the unidirectional valve comprises a tri-leaflet valve.

12. (Original) The spacer of claim 10, the conduit comprising a first conical section joined end to end with a second conical section.

13. (Original) The spacer of claim 12, wherein the first conical section includes a large diameter distal end surface joined to a small diameter proximal end of the second conical section, and wherein the at least one air inlet is positioned in the distal end surface of the first conical section.

14. (Original) The spacer of claim 13, further comprising a plurality of air inlets evenly spaced around the distal end surface of the first conical section.

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15. (Currently Amended) A spacer apparatus for transmitting medication to patients after the medication is dispensed by an inhaler external to the inhaler, the spacer comprising:

a mouthpiece;

a first chamber, the first chamber having a proximal end connected to the mouthpiece;

a second chamber, the second chamber having a proximal end connected to a distal end of the first chamber;

a spray inlet connected to a distal end of the second chamber, the spray inlet adapted to receive a medication spray from an inhaler, and

an unobstructed linear internal spray path defined from spray inlet to the mouthpiece, through the first chamber and the second chamber.

16. (Original) The apparatus of claim 15, wherein at least a portion of the one of the first or second chambers is collapsible.

17. (Previously Presented) The apparatus of claim 15, further comprising a plurality of air inlets passing through the apparatus to allow external air into the first chamber.

18. (Previously Presented) The apparatus of claim 17, wherein the first chamber and the second chamber are converging chambers, wherein a diameter of the proximal ends of each chamber are smaller than a diameter of the distal ends of each chamber.

19. (Original) The apparatus of claim 17 wherein the plurality of air inlets have an oblong shape

20. (Original) The apparatus of claim 17 wherein the plurality of air inlets are circular.

21. (Cancelled)

22. (Cancelled)

23. (Previously Presented) A spacer for facilitating the delivery of a medication spray from a medication spray dispenser to the mouth of a patient, the spacer comprising:

a. spray inlet means to receive the medication spray;

b. a mouthpiece;

c. spacer walls defining at least one internal chamber and further defining an unobstructed, linear conduit means fluidly connecting the spray inlet to the mouthpiece; and

d. means to generate spray recirculation zones proximate the conduit means, the recirculation zones functional to inhibit contact between the medication spray and the spacer walls.

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24. (Original) The spacer of claim 23, the spacer walls defining first and second internal chambers.

25. (Previously Presented) The spacer of claim 24, the means for generating high-pressure recirculation zones comprising a closed chamber proximal to the spray inlet and at least one air inlet in the first internal chamber downstream of the spray inlet to allow external air into the first internal chamber.

26. (Currently Amended) A method of delivering a medication spray into the lungs of a patient using a spacer, the method comprising:

directing the medication spray into a spray inlet end of the spacer;

using the medication spray and spacer geometry to generate high-pressure recirculation zones inside the spacer; and

using the high-pressure recirculation zones and external airflow to direct the medication spray away from walls of the spacer and along an unobstructed linear path out of a mouthpiece end of the spacer.

27. (Previously Presented) The method of claim 26 further comprising delivering external air into the spacer through air inlets positioned downstream from the spray inlet.